

The Pennsylvania Coal Company Gravity Railroad

By Frank P. Adams

[The remains of Plane No. 4 of the PCC Gravity Railroad in Moosic could be negatively affected by the proposed expansion of Interstate 81 to three lanes in each direction in Moosic. This history of the PCC Gravity Railroad, by Frank P. Adams, is a description of the historical resource that may be negatively impacted by the proposed expansion of Interstate 81 in Moosic. Frank P. Adams is the author of *Rails Between Dunmore and Jessup: The Delaware, Lackawanna & Western's Winton Branch*, and *The History and Railroads of North Pocono*.]

Almost 200 years ago, in an effort to open the Lackawanna and Wyoming valleys' vast anthracite coal resources, the Pennsylvania Legislature in April 1838 (two years before the Scranton Iron Works began its operations) created two corporations. The Pennsylvania Coal Company (PCC) was chartered to operate mines in Pittston, Luzerne County, and transport anthracite by railroad. The same act also created the Washington Coal Company to operate mines in the Lackawanna Valley (Providence and Dunmore) and construct a railroad north to the canal of the Delaware and Hudson Company. Operated by some of the smartest businessmen in the anthracite trade, the PCC would eventually be headquartered in Dunmore and play a significant role in the history of that borough. The Washington Coal Company was run by a group of local entrepreneurs from Carbondale. The PCC's first mine, appropriately called the Number 1 shaft, opened around 1842 at the northeast corner of Railroad and Main streets in Pittston, but lacked a means of getting its product to market. Since the Washington Coal Company was the only one with the authority to construct a new railroad to the D&H Canal, the D&H dispatched its star engineer, James Archbald, to investigate. His first job would be to find a route through the almost unbroken forest and connect the Pittston and Dunmore coal fields with the D&H Canal at Hawley. In November 1847, using a level, chain and rod, he began the survey. Archbald had been superintendent of the D&H gravity road in Carbondale for 30 years, so he understood the technology. The PCC paid off the Washington Coal Company debts and took over building its gravity railroad. The company also purchased land in Dunmore, which would later be called Number 6. It would also become the location of the company's headquarters and shops. On June 22, 1849, the Pennsylvania Legislature officially merged the Washington Coal Company into the Pennsylvania Coal Company. Archbald hired engineer, William R. Moffet, to supervise construction of the railroad. It was completed from Dunmore to Hawley in May 1850 and from Dunmore to Port Griffith (Pittston) a month later. Widely considered an engineering marvel, the road would also prove to be a financial success, regularly earning 10 percent on the capital investment of \$836,660. Two different sets of tracks were used. The loaded track carried coal from the mines to the D&H Canal at Hawley, and the light track returned the empties. The two tracks followed different but parallel routes. Although they crossed seven times; in other places they were separated from each other by as much as a mile. Each track consisted of a series of planes or inclines (12 on the loaded and 10 on the light) strategically located to raise the cars' elevation in the shortest possible distance. Sets of cars called trips would be hoisted up the planes by cables run by water or steam-powered stationary engines. Between the planes were what was called the "levels" which were not actually level but a

descending grade of up to one percent. It is from these sections that the railroad received its name because as they rolled downhill, the cars were propelled only by gravity. The loaded track started at Port Griffith (Pittston) and ended in Hawley. Over a distance of 47 miles, 12 planes raised the cars 1,400 feet. In Hawley, coal was transferred to canal boats for their 108-mile trip down the D&H Canal. Empty cars then returned to Pittston via the light track. Beginning in Hawley at Plane 13, the return journey required only 10 planes. The Number 4 plane, located in Moosic, ran parallel to and on the west side of Rocky Glen Road close to the former Rocky Glen Park. Both sets of narrow-gauge (4'3") tracks were originally constructed of wood. Cross ties (called caps) were 6"x 9" hemlock timber, eight feet long and spaced rather closely at 10 feet apart. They were notched to accept perpendicular 6"x 8" hemlock timber "rails" which were 20-30 feet long. The hemlock rails were topped with an 18-foot-long, 1"x 3" beech wood strip covered by half-inch thick strap iron. In order to make it continuous the ends of the iron straps were dovetailed. Rectangular nailing holes about 15 inches apart attached the rails to the hemlock. The rectangular holes allowed the strap iron to expand and contract with temperature changes. Oil pans located about every four miles contained spring loaded iron rods with brushes to lubricate passing trains. When the coal strike of 1869 shut down the railroad, the PCC started converting the track to the more familiar steel T-rail with standard crossties on 24-inch centers. That was completed by 1875, however, even today, original pieces of the three-inch wide strap iron can still be found along the old right-of-way. On the light track, the hoisting engines were at the foot of the plane. On the loaded track they were at the top. Three-inch hemp ropes were originally used to hoist sets of cars called trips (five cars on the loaded track, eight on the light). However, due to the cost and frequent repairs, the hemp was soon replaced by 1-1/4" wire rope (steel cable) invented by John Roebling who would later use the technology he perfected on the PCC Gravity Railroad to build the longest suspension bridge in the world, the Brooklyn Bridge in 1883. Each plane actually had two cables of equal length, an up and a down cable. Links attached the two cables together. The upward moving cable ran on pulleys between the tracks. Each plane had a counterweight located in a tower to keep the cable tight. The footman, stationed at the bottom of the plane, used a four-foot chain called a sling to hook the lead car to one of the links on the slow-moving cable. A system of ropes from both the bottom and top of the plane were attached to bells (of different tones) in the engine house alerting the operator when the trip was ready. He would then increase the speed of the cable. At full speed, the trip of cars would be hauled up the plane at 25 mph. A derail or "trap" would stop any that broke loose by derailling the cars. At the top of the plane, the operator slowed the cable so the headman could detach and hold the set of cars until the full train was ready. The train crew would then take possession and guide the train down the level to the next plane to repeat the hoisting process. The PCC Gravity started operations with 900 coal cars constructed at Hawley. Each 10 x 3-foot wooden car carried between three and five tons of coal. A piece of canvas nailed to the truck frame served as a lid. In the 1860s, the company's shops were moved to Dunmore, where additional cars were built. In 1881, the railroad reached a peak of 3,200 cars. Loaded trains averaging 275 tons of coal consisted of between 55 and 70 cars (11 to 14 trips). Longer trains of empties were customary on the light track. The three-man train crews were generically called "car runners." The number one runner or foreman rode a wooden plank attached to the first car. He was responsible for switching. The second runner was the brakeman responsible for the middle cars in the train. Not every car was equipped with brakes, so he would normally ride on one he knew to have good

ones. The head or boss runner rode the last car; he was the conductor responsible for the train and kept count of cars delivered. He was also responsible for operating the train at a safe speed, 12 mph to 15 mph. Some histories have reported the runners were only paid for delivering loaded cars and that the empties were delivered for free. In fact, because it was usually not possible for a runner to return the same number of empties that they had delivered full, the company simplified the accounting and paid the runners a flat rate of \$1 for their 12-hour day. The railroad operated six days a week from 6 a.m. to sunset. Trains did not run at night. Most crews lived along the line, stopped the train when it got dark and chained it to the rail near their homes. Operationally, the railroad was split into two divisions. Twelve first-division crews delivered two loaded trains per crew a day to Number 6 (in the Bunker Hill section of Dunmore) and returned two trains of empties to Pittston. On the second division, 20 crews operated trains between Number 6 and Hawley. Each workday, a crew would deliver one loaded train to Hawley and one light (empty) train to Dunmore. The round trip would typically take 10 to 12 hours. The train crew was primarily responsible for controlling the speed of their train on the downhill levels between planes. To stop a train, everyone was required to work levers on the outside of the car that controlled the brakes. Because not every car was equipped with brakes, those without were controlled by jamming a "sprag" or "puddle stick" (shaped like a potato masher) between the truck frame and wheel. When not operating a train, the crews also helped the men at the planes and sorted cars in the yards. With the railroad up and running, in the fall of 1850, PCC General Manager John B. Smith instituted passenger and (non-coal) freight service. Freight trains consisted of six or seven cars and ran once each morning, except on Sundays. The general stores along the route depended on these for items such as dry goods, food, beverages, furniture and construction materials. The railroad also serviced the fledgling lumber and tanning industries of North Pocono. The PCC's passenger trains ran coaches and baggage cars between Dunmore and Hawley. By 1883, it would have 15 coaches that seated 20 people lengthwise like a modern subway car. The interior was lit by two oil lamps and heated by a coal stove. The first passenger car was named "The Pioneer." Even though each car had its own name, the passenger trains came to be known generically as "Pioneers." Service was provided by two daily trains, again except on Sunday, and the two-hour trip cost \$1 (one day's wages for a car runner). Scranton customers boarded at "The Latches". The location today is near where Moosic Street crosses over I-81. From there passengers could disembark at any destination they chose between Number 6 and Number 12 planes. Many traveled to Jones Lake (today known as Lake Ariel) at plane Number 19 for a day in the country. The journey was exciting and the scenery splendid. There was no smoke or cinders like on the steam roads, but the riders experienced a giddy sense of danger as the cars whisked their way along the mountainsides and ravines. Novice riders were said to expect instant destruction at every turn and twist of the road. A single road all the way to the mines offered many advantages. By 1880, the PCC entered into discussions with the Erie Railroad for extending its Hawley Branch to Pittston. The road, named the Erie and Wyoming Valley (E&WV), was constructed parallel to and in many places alongside the Gravity. It opened for traffic in 1884. Two years later the economies of the steam road were obvious, and plans were made to abandon the Gravity. By 1885, the bulk of coal was being shipped via the Erie and Wyoming Valley Railroad, and on May 22nd the first steam passenger train made a trip from Hawley to Dunmore. The next month all coal shipments had been transferred to the E&WV. Passenger service would continue on the Gravity until the fall when a new service of mixed

passenger and freight would begin to Pittston. The last train on the Gravity ran on December 18, 1885. The track was removed incrementally as equipment from the planes was transported to the shops at Number 6 in Dunmore. The steam engines and boilers found new use at many of the PCC's mining operations. In 35 years of operation, the Gravity hauled on average a million tons of coal per year. Two Gravity passenger coaches survive to this day. "The Dobson" was restored by gravity railroad veterans and presented to the City of Scranton by the PCC on September 3, 1909. Last used in 1884, it is on display in Scranton's Nay Aug Park behind the Everhart Museum. "The Pioneer" is on display in Hawley.

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